

After the claims, please insert the following Abstract on a separate page:

ABSTRACT

A cooling plate for an iron and steelmaking furnace includes a copper cooling plate body having at least one cooling duct for a cooling medium extending essentially parallel with the back of the cooling plate body. The cooling plate body further includes a preformed, externally accessible recess into which the cooling duct opens. A connection piece is utilized as a cooling medium connection on the back of the cooling plate body, while a formed piece fitted within the externally accessible recess forms a deflection surface for the cooling medium flowing from the connection piece into the cooling duct, or from the cooling duct into the connection piece.

IN THE CLAIMS:

Please cancel Claims 1-30.

Please add the following new Claims 31-62:

31. A cooling plate for an iron and steelmaking furnace comprising:
a copper cooling plate body with at least one cooling duct for a cooling medium, which extends essentially parallel with the back of said cooling plate body, and at least one preformed, externally accessible recess into which said cooling duct opens;

at least one connection piece for a cooling medium connection on the back of said cooling plate body; and

a formed piece that is fitted in said preformed, externally accessible recess in said cooling plate body so as to form a deflection surface for the cooling medium flowing from said connection piece into said cooling duct or from said cooling duct into said connection piece.
32. The cooling plate according to claim 31, wherein said formed piece is arranged in an axial extension of said cooling duct, said deflection surface being formed by one of its end faces.

33. The cooling plate according to claim 32, wherein:
said cooling plate body has a front side, a rear side and an end face;
said recess axially extends said cooling duct into said end face;
said connection piece opens from said rear side into said cooling duct;
said formed piece is a plug, which is inserted from said end face into said recess
and extends to the area where said connection piece opens into said cooling duct
to form said deflection surface for said cooling medium in this area.
34. The cooling plate according to claim 33, wherein said plug has a bevelled end
which forms said deflection surface.
35. The cooling plate according to claim 31, wherein said formed piece is a
prefabricated transition piece, which has an internal, curved transition duct
forming said deflection surface.
36. The cooling plate according to claim 35, wherein in that said transition piece and
said recess have complementary shapes, said transition piece being sealed from
said outside in said recess.
37. The cooling plate according to claim 36, wherein a gap subsisting between said
cooling plate body and said transition piece fitted in said recess is sealed from the
outside by welding or soldering.
38. The cooling plate according to claim 35, wherein said cooling duct in said cooling
plate body has a first cross-section and said connection piece a second cross-
section, a transition from said first to said second cross-section taking place
progressively in said transition duct of said transition piece.
39. The cooling plate according to claim 37, wherein said cooling duct in said cooling
plate body has an oblong cross-section and said connection piece has a circular
cross-section, said transition from said oblong to said circular cross-section taking
place progressively in said transition duct of said transition piece.
40. The cooling plate according to claim 35 wherein said transition piece has a
shoulder, which projects from said back of said cooling plate.
41. The cooling plate according to claim 35, wherein said connection piece is welded
or soldered into said transition piece.

42. The cooling plate according to claim 35, wherein:
said cooling plate body has a front side, a rear side and a thickness; and
said recess is milled into said copper cooling plate body from said rear side, so
that it has a depth that is smaller than the thickness of said cooling plate body.
43. The cooling plate according to claim 35, wherein:
said cooling plate body has an end face; and
said recess terminates in said end face.
44. The cooling plate according to claim 35, wherein said prefabricated transition
piece is a mould casting made from copper or a copper alloy.
45. The cooling plate according to claim 31, wherein said at least one cooling duct is a
blind bore drilled into said cooling plate body.
46. The cooling plate according to claim 31, wherein said cooling plate body is a
continuously cast cooling plate, wherein said at least one cooling duct is formed
as a continuous duct during continuous casting.
47. A process of manufacturing a cooling plate for an iron- and steelmaking furnace
comprising following steps:
manufacturing a cooling plate body from copper or a copper alloy with at least
one cooling duct for a cooling medium, which extends essentially parallel with
the back of said cooling plate body, and at least one externally accessible recess
into which said cooling duct opens;
providing at least one connection piece for a cooling medium connection on the
back of said cooling plate body; and
fitting a formed piece in said preformed, externally accessible recess in said
cooling plate body so as to form a deflection surface for the cooling medium
flowing from said connection piece into said cooling duct or from said cooling
duct into said connection piece.
48. The process according to claim 47, wherein said formed piece is arranged in an
axial extension of said cooling duct, said deflection surface being formed by one
of its end faces.

49. The process according to claim 48, wherein:
said cooling plate body has a front side, a rear side and an end face;
said recess axially extends said cooling duct into said end face; and
said connection piece opens from said rear side into said cooling duct.
said formed piece is a plug, which is inserted from said end face into said recess
and extends to the area where said connection piece opens into said cooling duct
to form said deflection surface for said cooling medium in this area.
50. The process according to claim 49, wherein said plug has a bevelled end which
forms said deflection surface.
51. The process according to claim 47, wherein said formed piece is a prefabricated
transition piece, which has an internal, curved transition duct forming said
deflection surface.
52. The process according to claim 51, wherein in that said transition piece and said
recess have complementary shapes, said transition piece being sealed from said
outside in said recess.
53. The process according to claim 52, wherein a gap subsisting between said cooling
plate body and said transition piece fitted in said recess is sealed from the outside
by welding or soldering.
54. The process according to claim 51, wherein said cooling duct in said cooling plate
body has a first cross-section and said connection piece a second cross-section, a
transition from said first to said second cross-section taking place progressively
in said transition duct of said transition piece.
55. The process according to claim 54, wherein said cooling duct in said cooling plate
body has an oblong cross-section and said connection piece has a circular cross-
section, said transition from said oblong to said circular cross-section taking place
progressively in said transition duct of said transition piece.
56. The process according to claim 51 wherein said transition piece has a shoulder,
which projects from said back of said cooling plate.
57. The process according to claim 51, wherein said connection piece is welded or
soldered into said transition piece.

58. The process according to claim 51, wherein:
said cooling plate body has a front side, a rear side and a thickness; and
said recess is milled into said copper cooling plate body from said rear side, so
that it has a depth that is smaller than the thickness of said cooling plate body.
59. The process according to claim 51, wherein:
said cooling plate body has an end face; and
said recess terminates in said end face.
60. The process according to claim 51, wherein said prefabricated transition piece is a
mould casting made from copper or a copper alloy.
61. The process according to claim 47, wherein said at least one cooling duct is a
blind bore drilled into said cooling plate body.
62. The process according to claim 47, wherein said cooling plate body is
continuously cast, and said at least one cooling duct is formed as a continuous
duct during continuous casting.